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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,372	02/25/2004	Shiying Zheng	85588RLO	3400

7590 01/13/2006

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EXAMINER
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GARRETT, DAWN L

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/786,372	ZHENG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Dawn Garrett	1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 2 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

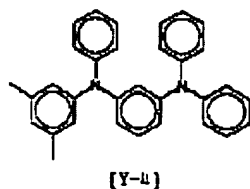
#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Response to Amendment*

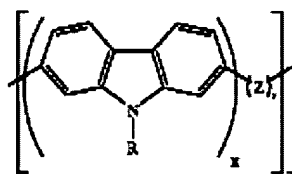
1. This Office action is responsive to the amendment received November 7, 2005. Claims 1, 5, and 6 were amended. Claims 1-10 are present in the application. The species under consideration at this time is a compound according to the claim formula where Ar, Ar<sub>1</sub>, Ar<sub>2</sub>, Ar<sub>3</sub> and Ar<sub>4</sub> are individually phenyl groups. Claims 1 and 3-10 read upon this species. Claim 2 is withdrawn at this time as a non-elected claim.
2. The objection to the abstract previously set forth is now withdrawn. The amended abstract is acknowledged and has been entered.
3. The rejection of claims 1-10 under 35 USC 112, second paragraph, set forth in the last Office action (mailed 8/4/05), paragraph 4, is withdrawn due to the amendment.
4. The rejection of claims 6 and 10 under 35 U.S.C. 102(b) as being anticipated by Fujiyama et al. (JP 08-113622) is withdrawn due to the amendment requiring a coating solution process.
5. The rejection of claims 1, 3, 4, 7, and 8 under 35 U.S.C. 102(b) as being anticipated by Fujiyama et al. (JP 08-113622) is maintained. Fujiyama et al. discloses polyazomethine, its production and thin film electroluminescent element (see title). Fujiyama discloses a repeat unit according to Formula [3],  $\{X - N = CH - Y - CH = N\}$  (see par. 12), wherein Y of the formula may be



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(see par. 34). Formula 3 (see par. 12) shows a conjugate group immediately adjacent to the tertiary amine “Y” group. Since X may be a plurality of groups according to dependent claim 3 and the polymer described by claims 1 and 6 does not limit further groups from being present in the polymer, Formula 3 wherein Y is the above shown [Y-4] is deemed to anticipate the polymer species under consideration. Fujiyama et al. discloses the electroluminescent layer is disposed between electrodes (see par. 46).

6. Claims 1 and 4-10 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Leclerc et al. (US 6,630,254) in view of Fujiyama et al. (JP 08-113622). Leclerc et al. discloses an organic light emitting diode (OLED) comprising as an active material a compound of the following formula (see claim 12, col. 10):



wherein

R is a substituent selected from the group consisting of C<sub>1</sub>-C<sub>22</sub> linear or branched alkyl group, poly (ethyleneoxy), cyano, aryl, amide, and benzoyl;

Z is a co-monomer selected from the group consisting of ethylene, acetylene, C<sub>6</sub>-C<sub>22</sub>-aromatic groups, C<sub>2</sub>-C<sub>10</sub>-heterocyclic groups, and tertiary amines;

x is an integer between 1 and 100;

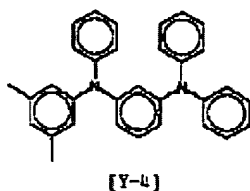
y is an integer between 0 and 100; and

n is an integer between about 3 to about 100;

wherein when y is greater than 1, each Z may be the same or different.

The carbazole group of the above compound reads upon the conjugated “X” portion of the present polymer under consideration. Z in the above Leclerc et al. formula may generally be a tertiary amine; however, Leclerc et al. fails to specify the tertiary amine according to the present species under consideration. Fujiyama et al. teaches in analogous art the following tertiary amine moiety for use in a light-emitting polymer (see par. 34):

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It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected any tertiary amine moiety known in the art, including the above [Y-4] moiety taught by Fujiyama et al., because Leclerc et al. generally teaches a tertiary amine may be the “Z” group of the active material polymer compound taught by Leclerc et al. With regard to claim 5, the layers of the Leclerc et al. device comprising the conjugated poly(N-alkyl-2,7,-carbazole) derivative may be doped with other hole or electron transporting materials per the polymer being doped with “other light emitting materials” (see col. 4, lines 3-8; figure 3; first example, col. 7; second example, col. 8). The active material taught by Leclerc et al. may be used as an emitter per claims 4 and 7 (see col. 4, lines 3-8). With regard to method claim 6, Leclerc teaches polymers can be easily soluble and spun-on or reel-coated (see col. 1, lines 55-67 and Examples).

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1 and 3-5, 8 and 9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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It is not seen where applicant had possession of an azo group representing variable "X" at the time of the invention. Applicant states in the response received November 7, 2005, "None of the examples in the present application include an azo group" (see sixth paragraph, page 8 of response). The addition of "non-azo" as a limitation in claims 1 and 5 is considered to be new matter.

### *Response to Arguments*

9. Applicant's arguments received November 7, 2005 have been fully considered but they are not persuasive.

Applicant appears to have amended independent claims 1 and 5 by adding the limitation "non-azo" in order to overcome the Fujiyama et al. reference. Fujiyama et al. teaches the Formula [3],  $\{ X - N = CH - Y - CH = N \}$ . The Y variable is the tertiary amine. There appear to be no azo groups that are required by the Formula [3] formula. An "azo" group is conventionally known to be  $- N:N-$ . It is not seen where Fujiyama requires a nitrogen to nitrogen bond. Accordingly, the rejection over Fujiyama et al. is maintained.

With regard to the 35 USC 103(a) rejection over Leclerc, applicant argues "If one were to substitute carbazole group of Leclerc et al. into formula III of Fujiyama et al. there would still be an azo group". The examiner submits that Leclerc et al. is set forth as the primary reference and Fujiyama et al. is relied upon as a secondary reference in order to teach a known tertiary amine moiety. The examiner has not rejected the claim by placing the primary reference polymer into a formula of the secondary reference as suggested by applicant. Only a moiety of the Fujiyama et al. polymer formula is being relied upon in the rejection to teach a specific tertiary amine moiety known to one in the art as a tertiary amine for making polymers. Leclerc clearly teaches a

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tertiary amine is desirable as the "Z" variable of the formula (taught at claim 12, col. 10). The teaching of tertiary amine clearly encompasses the tertiary amine moiety currently under consideration. Accordingly, the rejection over Leclerc et al. in view of Fujiyama et al. is respectfully maintained.

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached at (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Dawn Garrett  
Primary Examiner  
Art Unit 1774

D.G.  
January 10, 2005